EXPLORING EARTH'S MYSTERIES
...PROTECTING ITS FUTURE

Brookhaven National Laboratory
Live-Fire Range

Facility Environmental Monitoring Report

Calendar Year 2001

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Summary of Results*: Analysis of groundwater samples collected at the Live-Fire Range during CY 2001 indicates that range operations have not impacted groundwater quality. Groundwater analyses indicate that all metals (including lead) are at concentrations that are consistent with established background levels.*

Background

The BNL Live-Fire Range consists of a six-position, 100-yard, bermed outdoor small arms and grenade range. The primary use of the current facility is to allow members of the BNL Police Group to practice and qualify in the use of firearms and to gain experience in the use of smoke and CS gas grenades. Federal law enforcement agencies and the Brookhaven Employees Recreation Association (BERA) also occasionally use the range.

The present BNL Live-Fire Range was constructed in 1986, and is located immediately to the north of the BNL Sewage Treatment Plant. The eastern half of the range is located within 200 feet of the Peconic River (Figure 1). BNL utilized this same location as a practice range from 1963 until the present facility was constructed in 1986. The small arms and grenade ranges are co-located, side-by-side, and have a combined area of 87,516 square feet. The bullet stop (i.e., rear berm) of the live fire range is an earthen berm, and is screened for lead on an annual basis. The bullets are known to have a typical penetration depth of approximately two to three inches into the berm. The soil of the rear berm is screened to a depth of approximately one foot. The lead shot recovered during the screening process and the spent brass cartridges are disposed of off-site via a commercial waste handler as scrap metal. The grenade range is essentially an open field surrounded by earthen berms.

Environmental Monitoring Program

In accordance with DOE Order 5400.1 (Environmental Protection), BNL has established a groundwater monitoring program at Live-Fire Range to evaluate potential impacts to environmental quality. The primary contaminant of concern is lead. The environmental monitoring program for the Live-Fire Range is described in the BNL Environmental Monitoring Plan (Daum *et al*. 2000; BNL, 2001).

Monitoring Results

During CY 2001, all metals concentrations were below the applicable New York State Ambient Water Quality Standards (NYS AWQS) and are consistent with established background levels (Table 1).

Future Monitoring Actions

It is recommended that:

- Continue with collecting groundwater samples on an annual basis for CY 2002, and test only for metals.
- Consider reducing the sampling frequency to once every two years starting in CY 2003.

References

BNL, 2001. Brookhaven National Laboratory Environmental Monitoring Plan, CY 2001 Update (January 2001). BNL-52584 Update.

Daum, M., Dorsch, W., Fry, J., Green, T., Lee, R., Naidu, J., Paquette, D., Scarpitta, S., and Schroeder, G., 2000. Brookhaven National Laboratory, Environmental Monitoring Plan 2000 (March 31, 2000).

BNL Facility Environmental Report
Live Fire Range
Groundwater Monitoring Program
Metals Analytical Results for CY 2001
Table 1

Well	Sample Period	Ag (mg/L)	Al (mg/L)	Cd (mg/L)	Cr (mg/L)	Cu (mg/L)	Fe (mg/L)	Hg (mg/L)	Mn (mg/L)	Na (mg/L)	Pb (mg/L)	Zn (mg/L)
039-91	March	<0.001	0.032	<0.001	<0.001	0.005	<0.075	<0.0001	0.017	1.9	<0.0013	0.024
039-92	March	0.001	0.075	<0.001	<0.001	0.005	<0.075	<0.0001	0.017	1.4	<0.0013	0.021
Typical MDL		0.001	0.002	0.001	0.001	0.002	0.075	0.0002	0.002	1.0	0.001	0.004
NYSAWQS		0.05	0.1	0.01	0.05	0.2	0.3	0.0007	0.3	20	0.025	0.3

Note: Primary potential contaminants shown. Other metals were analyzed for – see database for complete data set
MDL: Minimum Detection Limit
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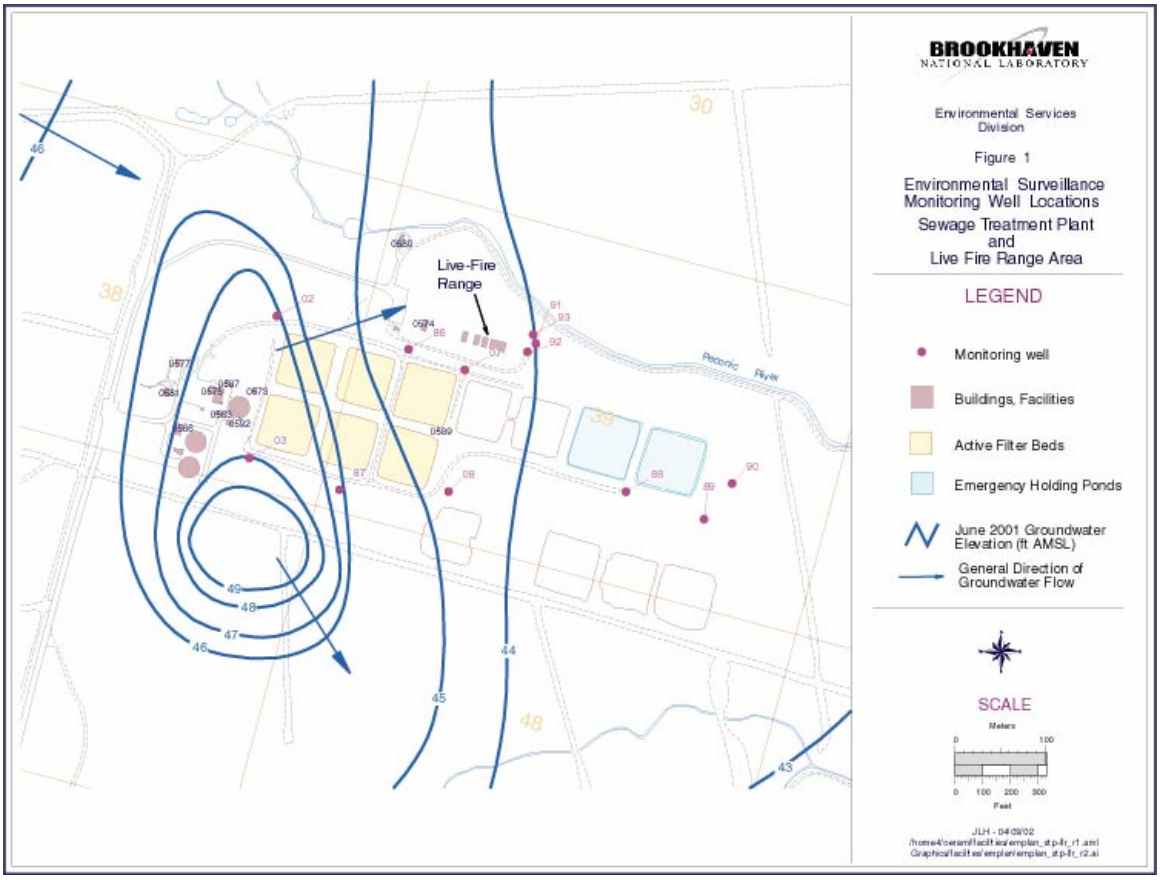
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Division
Figure 1
Environmental Surveillance
Monitoring Well Locations
Sewage Treatment Plant
and
Live Fire Range Area
LEGEND
Monitoring well
Buildings, Facilities
Active Filter Beds
Emergency Holding Ponds
June 2001 Groundwater
Elevation (ft AMSL)
General Direction of
Groundwater Flow
SCALE
Meters
Feet
Live-Fire
Range
Peconic River
JLH - 04/09/02